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EXAMINER

GEISEL, KARA E

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 07/21/2003

#12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/680,436

Applicant(s)

MELLER, PAUL

Examiner

Kara E Geisel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 80 is/are allowed.
- 6) ☒ Claim(s) 41-57 and 61-78 is/are rejected.
- 7) ☒ Claim(s) 58-60 and 79 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 41 and 65-69 are rejected under 35 U.S.C. 102(b) as being anticipated by Paul et al. (WO 86/07454), newly cited.

In regards to claims 41 and 69, Paul discloses a method and apparatus for analyzing a sample comprising at least one light source (fig. 1, 2), means for guiding light emitted from the one light source through a sample to be analyzed (fig. 1, 4) to generate a first signal and a second signal different from the first signal (Derwent abstract), means for detecting the first signal (fig. 1, 20) to obtain a nephelometric measurement of the sample (page 6, lines 16-36), and means for detecting the second signal (fig. 1, 13) substantially simultaneously with detection of the first signal to obtain a spectrophotometric measurement of the sample (pages 4-5, lines 33-38 and 1-17, respectively).

In regards to claim 65, the method further includes amplifying and converting at least one of the first and second signals (page 5, lines 2-22).

In regards to claim 66, the method further includes commonly controlling the detection, evaluation, and presentation of at least one of the first and second signals (fig. 1, 15).

In regards to claim 67, the method further comprises performing an in-vitro analysis (fig. 1, 21 and page 4, lines 4-9).

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In regards to claim 68, the position of the sample to be analyzed is constantly changing because it is flowing through a pipeline with different samples brought to the apparatus in succession (page 4, lines 4-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 42-46, 49-50, 53, 55-56, 62, 70-72 and 76-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Hafemen et al. (USPN 5,959,738), previously cited.

In regards to claims 42-46, 49-50, 53, and 70-72, a method and apparatus for analyzing a sample is disclosed above. Paul provides only one light source. However, the light source has wavelengths in the visible and near infrared range. It is well known in the art to use two light sources to provide a combined spectral range from visible to near infrared, and it would be obvious to one of ordinary skill in the art to use two light sources, instead of one, in order to provide a source with a range from visible to near infrared.

For example, Hafeman discloses an apparatus for analyzing a sample. Hafeman teaches that the light source can be one light source with a broad range of wavelengths, two or more light sources, such as LED's, with different narrow ranges of wavelengths combined together to obtain the desired range, or one light source with a broad range of wavelengths and one or more narrow range light sources combined to obtain the desired wavelength range. This is done in order to easily, and effectively obtain different wavelength ranges or to extend the range of wavelengths that would be available with only one light

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source (columns 7-8, lines 56-67 and 1-16, respectively). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use more than one light source, one having a broad band emission in the visible range (in a range between 300-800nm) and one, such as an LED, having a narrow band emission in the red to near infrared range (in a range between 650-950nm), to obtain the desired range of wavelengths needed to analyze the sample.

In regards to claims 55, 62 and 76, Hafeman further discloses guiding light from the at least one light source through a filter in order to select the specific wavelengths needed (column 7, lines 47-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place a filter after the light source of Paul's apparatus in order to select wavelengths needed for the measurements and to separate out light of an undesirable spectral region to suppress it.

In regards to claims 56 and 77, the combined system with a filter is disclosed above. Furthermore, guiding the light emitted from the at least one light source further includes guiding the light through a diaphragm in the form of the core of the fiber the light is directed through (Paul fig. 1, 4).

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Hafemen et al. (USPN 5,959,738), previously cited, and further in view of Van Den Bosch (USPN 3,832,062), newly cited.

In regards to claim 47, the combined system, as discussed above, does not disclose that either light source is in the ultraviolet spectral region. However, it is well known in the art to use all wavelengths in the range from ultraviolet to near infrared to analyze a fluid sample with a spectrophotometer, such as described by Paul.

For example, Van Den Bosch discloses a spectrophotometer for analyzing a sample. The spectrum of the sample is analyzed by illuminating the sample with light ranging from ultraviolet to the near infrared range and detecting the spectrum of the sample with the spectrophotometer (column 3, lines 25-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

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was made to have one of the light sources of the combined system include wavelengths in the ultraviolet spectral region in order to fully analyze a sample.

Claims 48, 51, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Hafemen et al. (USPN 5,959,738), previously cited, and further in view of Bach et al. (USPN 4,730,922), as cited by applicant.

In regards to claims 48, 51, and 73, the combined system is disclosed above. The combined system does not disclose that either light source is a Xenon pulsed light.

Bach discloses an apparatus that detects a signal for nephelometric measurement. The light source used is a pulsed Xenon light source. This is done in order to enhance the nephelometric measurement (column 4, lines 35-58). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pulsed xenon light source as one of the sources in order to enhance the nephelometric measurement.

Claims 52, 57, 63-64, and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Bach et al. (USPN 4,730,922), as cited by applicant.

In regards to claim 52, Paul discloses that the light source is a Xenon light source (page 3, lines 34-37), however, it is not disclosed that the light source is pulsed.

Bach discloses an apparatus that detects a signal for nephelometric measurement. The light source used is a pulsed Xenon light source. This is done in order to enhance the nephelometric measurement (column 4, lines 35-58). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pulsed xenon light source as the light source in order to enhance the nephelometric measurement.

In regards to claims 57, 64, and 75, Paul does not disclose means for detecting light for a reference signal. However, it is well known in the art to detect a reference signal in order to measure variations in the apparatus that could affect the sample measurement.

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For example Bach discloses a beam splitter (fig. 1, 24) for directing a portion of light from a light source to a reference detector (fig. 1, 29). This is done so that lamp instabilities can be measured and compensated for. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to direct a portion of the light from the at least one light source to a reference detector to create a reference signal in order to compensate for instabilities in the light source. Furthermore, this reference signal is used to calibrate wavelengths and absorptions of the light emitted from the at least one light source (column 6, lines 24-37).

In regards to claim 63, the combined system does not disclose exciting the sample to be analyzed with the light emitted. However, Bach discloses that the Xenon pulsed light is ideal for taking fluorescence as well as nephelometric measurements (column 4, lines 35-49). Bach excites a sample to fluoresce in order to determine information about materials in the sample (column 1, lines 6-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Xenon pulsed light to further excite the sample in order to gain more information about the material in the sample.

Claims 54 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Hafemen et al. (USPN 5,959,738), previously cited, and further in view of Khaled et al. (FR 2,792,725), cited by applicant.

In regards to claims 54 and 74, Hafeman discloses combining the wavelengths of the light sources, Paul discloses having the light source directed along a common beam axis, but neither discloses coupling the light from the two light sources into a common beam. However, it would be obvious to one skilled in the art to do so, in order for the combined spectral range of the two light sources be directed towards the sample through the common beam axis of Paul's apparatus.

A means to couple the light from the two light sources into the common beam axis is disclosed by Khaled. Khaled discloses two light sources (fig. 1, SL1 and SL2) that are coupled by two optical fibers

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(fig. 1, 4 and 5) onto a common beam axis (fig. 1, 3) so that the combined light can be directed toward a sample (fig. 1, 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use two fibers to couple the two light sources of the combined system onto a common beam axis, so that the combined light could be directed towards the sample.

Claims 61 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. (WO 86/07454) in view of Hafemen et al. (USPN 5,959,738), previously cited, further in view of Khaled et al. (FR 2,792,725), cited by applicant, and further in view of Bach et al. (USPN 4,730,922), as cited by applicant.

In regards to claims 61 and 78, the combined apparatus does not disclose means for deflecting light out of the common beam. However, it is well known in the art deflect light out of the common beam in order to detect a reference signal in order to measure variations in the apparatus that could affect the sample measurement.

For example Bach discloses a beam splitter (fig. 1, 24) for deflecting light out of the common beam from a light source to a reference detector (fig. 1, 29). This is done so that lamp instabilities can be measured and compensated for. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to deflect a portion of the light from the at least one light source out of the common beam to a reference detector to create a reference signal in order to compensate for instabilities in the light source.

Allowable Subject Matter

Claim 80 is allowed.

Claims 58-60 and 79 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

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As to claim 58, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for analyzing a sample further comprising masking out light impinging at small angles around the common beam, in combination with the rest of the limitations of claim 58.

As to claims 59 and 79, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus for carrying out optical measurements or a method for analyzing a sample further comprising detecting light impinging at small angles around the common beam, in combination with the rest of the limitations of claims 59 and 79.

As to claim 60, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for analyzing a sample further comprising detecting light impinging at angles of less than 5 degrees around a forward direction of the common beam, in combination with the rest of the limitations of claim 58.

As to claim 80, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus for carrying out optical measurements wherein light is detected at angles of less than 5 degrees around a forward direction of a common beam axis and the detected light of at least one signal is directed to an entrance slit of a spectrophotometric unit, in combination with the rest of the limitations of claim 80.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art of record is Garner (USPN 5,104,218).

Garner discloses a spectrophotometer, which can also measure either fluorescence or light scattering simultaneously (column 7, lines 2-15 and fig. 6).

Response to Arguments

Applicant's arguments with respect to claims 41-80 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is 703 305 7182. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

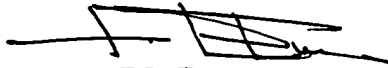
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703 308 4881. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications. For inquiries of a general nature, the Customer Service fax number is 703 872 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1782.

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A handwritten signature in black ink, appearing to read 'F.L. Evans', with a horizontal line drawn through the middle of the signature.

F.L. Evans
Primary Examiner
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Handwritten initials 'K.G.' in black ink.

KEG

July 14, 2003